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May 20, 2003

Mr. Erik N. Saltmarsh, Acting Director
Electricity Oversight Board
770 L Street, Suite 1250
Sacramento, CA 95814

RE: Energy Commission Staff Response to Comments Submitted by the Electricity Oversight Board Regarding the Informational Proceedings and Preparation of the 2003 Integrated Energy Policy Report, Docket No. 02-IEP-01

Dear Mr. Saltmarsh:

I would like to thank you and your staff for participating at the Energy Commission Integrated Energy Policy Report (IEPR) workshop in February and ongoing inter-agency meetings. The IEPR Committee has asked Energy Commission staff to consult and collaborate with other State agencies throughout the IEPR proceeding. We look forward to your involvement in the next series of IEPR Committee workshops and the review of upcoming staff reports.

The Electricity Oversight Board (EOB) submitted comments to the Ad Hoc IEPR Committee on March 10, 2003. The comments identify a number of concerns regarding the content presented in several Energy Commission staff draft reports that were discussed at the February 25 and 26 IEPR Committee workshop. The EOB suggests that some of the content in the staff draft reports could "detrimentally impact California's energy policy."

The Energy Commission staff offers the enclosed response comments to clarify the underlying assumptions and analytical basis that are provided in the staff draft reports. In general, staff believes the EOB's concerns regarding generation investment and supply adequacy somewhat misinterpreted the draft reports. We have taken the lesson to heart and will be more sensitive to these concerns in the next iteration of our analysis.

Sincerely,

AL ALVARADO,
Project Manager
Electricity & Natural Gas Report
California Energy Commission

Enclosure

cc: Ms. Erin Koch-Goodman, EOB
Chairman William J. Keese, CEC
Commissioner James D. Boyd, CEC
Advisor Scott Tomashefsky, CEC
Advisor Susan Bakker, CEC

Energy Commission Staff Response to Comments Submitted by the Electricity Oversight Board

This response will first explain what staff work is underway. Given that context, it will then respond to specific points raised in the EOB comments.

Description of Planned Analysis

The Energy Commission staff recognizes that there may still be some degree of uncertainty regarding the capability of the evolving market structure to adequately provide needed system reliability and competitive prices. To date, there have not been any recent risk studies that provide an adequate evaluation of the proper planning reserve margins needed to establish a reliable and economically sustainable electricity system under the current market structure. A rigorous reliability analysis would consider the dynamic nature of the system, diverse interconnection opportunities, facility-outage uncertainties, local transmission constraints and differing load characteristics. A proper reliability study would also consider the specific attributes that different electricity supplies or load-management options would contribute to system reliability. It should also consider how market imperfections would affect generation availability, price volatility and incentives for new infrastructure investments. Accordingly, many assertions regarding proper reliability standards are based on professional experience and judgment.

The focus of the current supply adequacy assessment that was included in the referenced staff draft reports is based on a detailed review of recent demand trends and actual development of new generation facilities throughout the western United States. A significant number of new generation capacity added throughout the west will likely result in a robust wholesale spot market. Furthermore, the relatively small net short position that the investor-owned utilities will have this summer minimizes the financial consequences of potential wholesale spot market price spikes compared to the observed risks during the 2000-01 energy crisis. Utility filings at the California Public Utilities Commission procurement proceeding also point out that there is adequate generation supplies for the next several years.

The staff draft reports provide detailed information on recent energy system trends. The expected planning reserve margin for California this summer is now 22 percent and 20 percent in 2005, far above past planning reserve margin criteria and the proposed target that the California Power Authority is considering. If we consider a very conservative amount of regional spot capacity that has a high likelihood of being available during the peak summer period, even under drought conditions, the planning reserve margin jumps to 27 percent this summer and 25 percent in 2005. The high planning reserve margins imply that there should be more than sufficient supplies to meet expected electricity demand growth over the next few years.

The Energy Commission staff outlook suggests that the system reliability and market price risks are not as volatile compared to circumstances of the recent past.

Regardless of this outlook, the California energy markets are still evolving and there are a number of structural changes that are being considered. The Energy Commission staff recognizes that there is a degree of uncertainty regarding the potential performance of the energy markets for the near future.

Scope of the Energy Commission Staff Studies

The Energy Commission staff released five draft reports for public review and discussion at an IEPR Committee workshop that occurred on February 25 and 26 this year.[1] The purpose of the workshop was to seek technical feedback to further refine ongoing Energy Commission staff studies. The reports document energy demand trends, comparative costs of central station generation facilities, retail rates projections given current tariffs, and the progress of new electricity generation, transmission, gas pipelines and storage projects throughout the west. The reports also provided baseline supply and demand projections, and a discussion regarding a number of proposed scenarios for ongoing staff studies. The first set of reports serve as the beginning building blocks necessary for evaluating the uncertainty that may affect actual infrastructure developments. Energy Commission staff will be releasing the results of the energy infrastructure study on May 23, 2003 and there will be an IEPR Committee Hearing on June 10 and 11, 2003 to take public comments.

The Energy Commission staff has already incorporated some of the EOB comments into the infrastructure study, which will be reflected in upcoming staff reports. Nevertheless, many of the concerns identified by the EOB do not apply to the actual context and scope of the Energy Commission staff studies. The purpose of the IEPR staff studies is to evaluate the implications of a number of important uncertainties on the integrated electricity and natural gas infrastructure. The primary goal is to identify key factors that may stress the energy infrastructure and to determine if there may be a need for additional development to mitigate potential supply shortfalls in the next decade. The Energy Commission staff is also evaluating a number of other integrated system concerns that are identified in the *Staff Response to Committee Order* that was released on December 23, 2002.[2]

Considering that electricity generation is the primary energy sector that may have the largest affect on future natural gas demand, the Energy Commission staff is focusing the energy infrastructure study on the potential stresses to the fuel system. The Energy Commission staff is developing a number of electricity consumption scenarios and generation resource development plans to evaluate the potential implications on natural gas demand. **Figure 1** provides a flowchart of the different scenarios that the Energy Commission staff are evaluating in the infrastructure study. The six scenarios presented in **Figure 1** include varied combinations of input

[1] Staff draft reports can be found on the Energy Commission website at: http://www.energy.ca.gov/energypolicy/documents/index

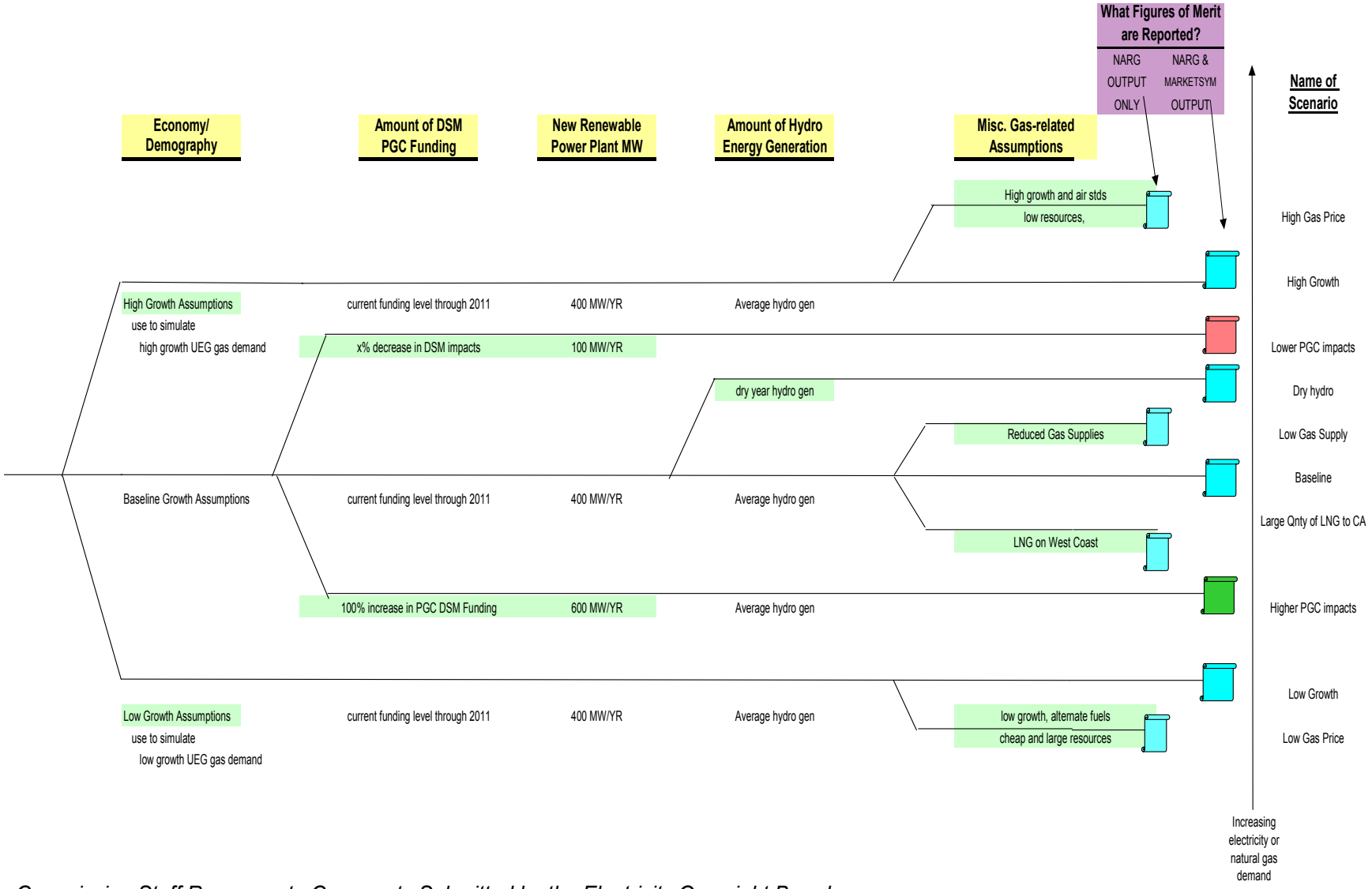
[2] The Staff Response to the Committee Order can be found at: http://www.energy.ca.gov/energypolicy/documents/2002-12-24_RESPONSE_SCOPING.PDF

assumptions that will have electricity and natural gas system modeling output as partial measures (figures of merit) of the scenarios' impacts. Five of the scenarios will have different electricity capacity expansion plans developed and reflected in the electricity system modeling results.

Natural gas system modeling figures of merit include: total regional and US annual gas consumption and production expressed in mmcfd; annual average regional and US well head gas price in $/MCF and regional price differentials; annual Canadian, Mexican and LNG import-exports in mmcfd: pipeline utilization in annual average mmcfd. Electricity system modeling figures of merit include: power plant generation and fuel use; NOx and CO2 emissions by air basin; annual planning reserve margin; major transmission path line loading (# of hours at full load); average monthly spot market electricity price by transmission area; and spark spread. The scenario analysis is focused on assessing the impact of natural gas and electricity infrastructure adequacy.

The staff will not provide scenario total costs because of a decoupling of cost and performance for key input assumptions (e.g. RPS compliance, DSM program, transmission costs). The staff is not conducting a least-cost and multi-attribute system analysis to develop a preferred resource plan. Furthermore, the staff is not developing a forecast to represent a single demand growth path, a prediction of market prices, likely total system costs estimates, or an expected change to the energy system and market structure. Rather, a number of basic decision criteria are used to produce a reasonable set of resource development assumptions to identify the potential risks to the natural gas infrastructure. This study will serve as a first level screening analysis and a precursor to a more detailed risk analysis effort that should be considered for upcoming Commission studies.

Figure 1
Design and Scope of the E&NG Assessment Scenario Analysis



Staff Reply to Specific EOB Comments:

It is our hope that the above clarification regarding the scope of the energy infrastructure studies will address most of the concerns that the EOB identified. The Energy Commission staff also offer the following reply to a number of specific EOB comments:

EOB Comment #1: It is inappropriate to use the level of installed generation capacity as a proxy to predict either the competitiveness of market performance or real-time operating reliability.

In numerous places, the reports assert that adequate generation capacity assures reliably delivered and competitively priced energy. This connection is carried further by stating that the CEC staff has concluded that adequate capacity has now been installed to ensure reliable and competitively priced power through 2005. Installed generation capacity should not be used as a direct proxy for either market performance or operating reliability.

Staff Reply: Staff acknowledges that the amount of *dependable* capacity does not alone ensure reliability or competitive pricing in spot markets below certain reserve margin levels; see the response to EOB Comments #2 and 8. Staff does not use *installed* capacity as a measure for any system evaluations.

EOB Comment #2: A conclusion that adequate capacity is installed to equal the forecast demand plus operating reserves should not by any means be taken to indicate that wholesale electricity markets will function competitively and produce reasonable prices.

Staff Reply: Contrary to what this statement implies, the amount of dependable capacity in place in the WECC does not equal the forecast demand plus reserves, it exceeds it by margins not seen since the late 1980's. It is the size of this reserve margin, combined with the relatively small reliance on spot markets to meet demand that leads staff to conclude that spot markets should yield reasonable prices during the next three years.

As quantified in the report, the amount of dependable capacity added in California and the remainder of the WECC, relative to observed and forecasted changes in peak load during 2000 – 2005 has been substantial. Moreover, the share of peak load for which energy and capacity has already been encumbered is in excess of 90 percent statewide. The increasing reserve margins and reducing dependency on the spot market would jointly facilitate competitive spot market prices was a fundamental driver of the decision to reduce the need for spot market purchases. Industry analysts agree that substantial amounts of capacity chasing a dramatically reduced amount of demand in spot markets has been a significant contributing factor in the price outcomes observed during the past twenty-one months. One need only look at the prices that have prevailed in California's wholesale spot markets during periods

of excess capacity to see that these markets are competitive at high reserve margins. Additional evidence exists from deregulated markets elsewhere in the United States and around the world (See the reply to EOB Comment #8).

EOB Comments #3: The Infrastructure Report appears to rely in various places on a premise that high spot-market prices must be allowed in order to foster investment in generation and that spot price caps will retard needed investment. The EOB believes this premise is inaccurate and should be removed.

Staff Reply: Staff does not make the assertion that high spot market prices "must be allowed to foster investment in generation and that spot price caps will retard needed investment." Nor does staff even suggest that high spot market prices *should* be allowed to increase to encourage investments. Staff merely asserts that high spot prices would facilitate investment; this statement is in accordance with basic economic theory and has been repeatedly made by both developers and the financial community.

EOB Comments #4: In the current (nationwide) investment environment, generation infrastructure investment is driven primarily by long-term contracts, not by projections of spot prices or spot-market caps.

Staff Reply: Staff concurs with the EOB observation that projects currently going forward are primarily those with long-term contracts, and current spot market price projections are insufficient to yield substantial investment at present without a long-term contract. Staff fully agrees with this, as evidenced by statements in the report. However, long-term contracts are influenced by current and projected spot market prices. Investment will depend upon expectations regarding market rules, the size of the spot market, degrees of uncertainty, etc. Many major projects have come on line during the past 18 months that lack long-term contracts; they did so precisely because of price expectations.

EOB Comment #5: The recent experience of the EOB in dealing with both energy companies and financing institutions leads to the opinion that very little generation will be financed "on spec" against anticipated spot-market sales regardless of whether price caps exist.

Staff reply: As evidenced by statements in the report, staff fully agrees that little generation will be financed during the next couple of years. Staff believes that this is due to expectations of low prices, the financial distress of most major developers, and regulatory uncertainty.

EOB Comment #6: In the near term, California's energy policy should not rely on "the market" to develop generation except to the extent that the state-regulated procurement processes may make specific solicitations to the market to develop facilities under contract.

Staff Reply: As the draft report implies, staff questions the near-term need to develop generation since it appears that there is sufficient generation to yield competitive outcomes in spot markets. That being said, staff does not question the wisdom of using long-term contracts to provide incentives for new construction. Doing so is prudent portfolio management and is considered by staff to be an element of the market process(es) that should be relied upon.

EOB Comments 7: It is unwise to rely on forward price projections that assume fully competitive pricing. It appears in places that the wholesale power price predictions outlined in the various draft reports were generated from production costs assuming the existence of fully competitive market behavior. If this was the basis for price forecasts, the EOB is very concerned about any assumption that the market will actually produce those prices. If this is not the case, it is unclear what assumptions regarding market performance were used. (There is a statement that the Marketsym model has simulated bidding behavior, but it is also stated that the CEC staff has concluded that capacity additions will produce competitive prices.)

Staff Reply: As noted above, staff has concluded that competitive prices will prevail in the spot market during 2003 – 2005 based on assessment of supply-demand conditions (see reply to EOB Comments #2 and 8). The retail price projections for subsequent years were based on wholesale price outcomes that followed, in turn, from assumptions regarding the additions of new capacity relative to load growth and the resulting behavior of sellers.

Regarding the capacity additions assumed by staff for 2007-2013, the additions were included in the base case scenario considering the assumption that market incentives and state policy would jointly yield enough new capacity to ensure reliability and competitive prices. As the report states, the assumptions are not a forecast. Staff can not assess the likelihood that state policy will yield enough capacity during 2007 - 2013, nor does it attempt to do so. Staff also does not attempt to outline what policy should be for the State. Staff merely provides an estimate of prices for 2007 – 2013 under the assumption that state policy achieves its objectives. The prices that would prevail in the absence of sufficient capacity would depend on market rules, *etc.* and thus would be an unsubstantiated estimate.

EOB Comment #8: [C]ompetitive market outcomes depend on sellers' market behavior and market rules and are not well predicted by installed capacity alone. While the depth of the market can be expected to affect the level of competition, so will market concentration, market rules, and other factors that are much harder to analyze (such as individual companies' hedge positions at any given time).

Staff Reply: Staff concurs with the importance of these market elements. When reserve margins are low, installed (*sic*) capacity cannot be used to accurately forecast the extent to which spot market prices will diverge from a competitive ideal. Evidence from deregulated markets throughout the world, including California, indicate that when reserve margins are as high as those that will exist in the WECC

during 2003 – 2005, competitive outcomes in spot markets are expected. But adequate supply alone, without enforceable market rules that limit undue market power, cannot guarantee reasonable prices.

EOB Comment #9: It is the EOB's position that adequate capacity is necessary to provision of reliable electric service and contributes to competitive prices but that capacity adequacy alone cannot be taken as ensuring reliability or competitive prices. Various market design proposals are aimed at preventing the various gaming and withholding practices of market participants because capacity alone cannot protect consumers from the price gouging and curtailments witnessed in 2000-2001. This conclusion equating capacity with reliability and a competitive price outcome, which is reiterated in various forms throughout the document, is invalid and should be removed.

Staff Reply: Staff defines "adequate capacity" as that which is necessary for reliability and competitive prices. The EOB comments suggest that there is no reserve margin level, however high, at which one can expect reliability and competitive prices.

Staff acknowledges, of course, that, below some threshold level, the amount of capacity necessary to ensure reliability and competitive spot market prices is markedly influenced by market structure and rules and, at very low reserve margins, reliability and competitive prices cannot be achieved. At the reserve margins anticipated for 2003 – 2005, however, it is difficult to imagine the circumstances under which sellers will be able to game the market on a routine basis (see reply to EOB Comment #2). Assuming that they will be able to do so simply because they were able to do so during a previous period of low reserve margins or during 100% exposure of load to the spot market and an inability of all major wholesale buyers to pay for energy ignores the changes in both the economic and political arenas that have taken place during the past two years.

EOB Comment #10: The basis for the conclusion that "surplus" or "excess" capacity exists through 2007 is not clear, particularly since assumptions regarding electricity demand are necessary (but not stated) in order to conclude that a particular level of capacity is "excess."

Staff Reply: The analysis contained both demand and generation outlooks. The actual forecasted values for electricity demand and capacity additions during 1999 – 2005 are explicitly stated in the report.

EOB Comment #11: In addition, the report makes broad and unsubstantiated conclusions such as "…regulatory uncertainty continues to unsettle both developers and financial markets…in the absence of very high spot market prices, these uncertainties must be resolved before a substantial amount of new capacity is brought into the market." (pg 10, emphasis added.) The EOB strongly disagrees with both the statement and the implied underlying assumptions, including that spot

market prices govern generation construction decisions. It is the position of the EOB that current or future predictions of spot market prices will not be the driving force behind investments in generation capacity. Rather the investment community is likely to require that developers exhibit the ability to recover costs with firm revenue projections associated with forward contracts.

Staff Reply: This comment seems to be based on a misunderstanding of staff's analysis. Staff generally agrees with EOB's views and will edit its future work. Long-term contracts are the 'ultimate' elimination of regulatory uncertainty. Staff is merely asserting what we believe the EOB would agree. Regarding the contention that forecasted spot market prices do not influence development decisions and will not do so in the future has been addressed by the response to EOB Comments #4 and 5.

EOB Comment #12: The problematic assumptions are the following:

Assume that the combination of generation additions and retirements provide the necessary level of reliability.
Assume that if the market does not yield desired amount of capacity for reliability, some form of regulatory oversight and intervention will assure it.
Assume the state will not be caught in a "short" position during the period in question.
Assume that overall reliability is adequately indicated by reserve margins.

By equating capacity adequacy with reliability and then assuming that capacity will be kept adequate, the resulting determination that reliability will be maintained becomes a forgone conclusion and is of little value. The state must act very deliberately in order to maintain adequate capacity. This need should be highlighted in developing policy and not assumed. Capacity adequacy and reserve margins affect reliability but should not be equated with reliability. There were instances during 2000 – 2001 where periods of load curtailment were not caused by a capacity shortage; rather they were the result of generators refusing to provide power dispatched by the ISO. In addition, the statements and assumptions regarding government intervention are confusing (particularly when taken together with the conclusion also included that government intervention will dampen generation development).

Staff Reply: For the first three assumptions, see reply to Section 7. Regarding being "caught short" during 2003 – 2005, see reply to EOB Comment #8. Regarding the fourth assumption, see the replies to EOB Comment #2.

Again, Staff does not forecast that "capacity will be kept adequate" during 2007 – 2013 (see the reply to EOB Comment #7). The report does illustrate (1) the amount of additional capacity needed for adequacy during the under the assumption that 1998-level reserve margins will be sufficient and, (2) the spot market prices that will prevail if capacity is kept adequate. And, again, the report does not comment on the

type or degree of intervention that will be necessary or sufficient to ensure capacity adequacy during this period.

Regarding a comparison of 2003 – 2005 to 2000 – 2001, see the reply to EOB Comment #9.

Regarding the concern that "statements and assumptions regarding government intervention are 'confusing'," the staff draft report does not say that "government intervention will dampen generation." The exact quote is "government intervention will dampen the investment *cycle*."